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EXAMINER	
MOLINARI, MICHAEL J	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/776,620	AHMADI ET AL.	
	Examiner	Art Unit	
	Michael J Molinari	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,8,10-17 and 20-23* is/are rejected.

7)☒ Claim(s) *4-7,9,18,19,24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 11 and 20 are objected to because of the following informalities: The claims refer to "dual frequency multi-tone (DTMF)", but should refer to "dual tone multi-frequency (DTMF)". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "ATM network" in claim 8 is used by the claim to mean "a connectionless network", while the accepted meaning is "a connection-oriented network." The term is indefinite because the specification does not clearly redefine the term. Although the specification does state "a connectionless network 11, e.g. an ATM or IP network" on page 5, IP networks are connectionless and ATM networks are connection-oriented and Applicant has not indicated in the specification that he wishes to redefine the term "connectionless".

4. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Line 4 of the claim contains the limitation "packetising said voice traffic at said," but omits the remainder of the limitation.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11-12 are rejected under 35 U.S.C. 102(b) as being anticiapted by Cox et al. (U.S. Patent No. 5,353,346).

7. Referring to claim 11, Cox et al. disclose a signaling tone detector for use in a communications network for the detection of dual tone multi-frequency (DTMF) pairs of signal tones representing user dialed digits in a time division multiplexed (TDM) signal (see column 1, lines 60-65), the detector comprising: first and second arrays of adaptive notch filters (see Figure 2, #24H and #24L), each said notch filter being adapted to respond to a respective signal tone by the generation of a corresponding output signal (see column 3, lines 15-22 and 43-67 and column 4, lines 1-2), and logic means for identifying from a combination of output signals from the adaptive notch filters the presence or absence of a pair of signal tones (see Figure 2, #28H and #28L and see column 3, lines 15-22) and, when the presence of a pair of signal tones has been

identified, for decoding that pair of tones to corresponding digit information (see column 3, lines 15-30).

8. Referring to claim 12, Cox et al. disclose that each of said adaptive notch filters is arranged as a single frequency noise canceller with first and second adaptive weights (see column 3, lines 31-52).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-3, 10, 14, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naudus (U.S. Patent No. 6,259,691) in view of Cox et al. (U.S. Patent No. 5,353,346).

11. Referring to claim 1, Naudus discloses a method of transporting voice traffic and audio multi-tone signaling information representing user dialed digits from a connection based network (see Figure 1, #17) to a connectionless network (see Figure 1, #20), determining the presence or absence of an audio multi-tone signal (see column 12, lines 24-31), in the absence of an audio multi-tone signal, compressing (see column 12, lines 27-29) and packetising said voice traffic for transport over the connectionless network (see column 12, lines 35-43), and, in the presence of an audio multi-tone signal, decoding that signal to corresponding digit information and transporting that digit information over the connectionless network (see column 12, lines 35-43). Naudus differs from claim 1 in that he fails to disclose notch filtering a plurality of signal

samples to determine the presence or absence of an audio multi-tone signal. However, the use of notch filtering to determine the presence or absence of an audio multi-tone signal is old and well known in the art. For example, Cox et al. teach just such a method (see Figure 2), which has the advantage of providing superior classification performance with an algorithm of low computational complexity (see column 2, lines 5-7). One skilled in the art would have recognized the advantage of using notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. into the system of Naudus to achieve the advantage of providing superior classification performance with an algorithm of low computational complexity.

12. Referring to claim 10, Naudus discloses software in machine-readable form on a storage medium and arranged to perform the method of claim 1 (see column 12, lines 24-61).

13. Referring to claim 2, Naudus discloses a method of transporting voice traffic and audio tone signaling information representing user dialed digits from a time division multiplex network (see Figure 1, #17) to a connectionless network (see Figure 1, #20), the method comprising compressing (see column 12, lines 27-29) and packetising said voice traffic at said interface in the form of compressed speech (see column 12, lines 24-31), and, when the presence of a said pair of tone signals is indicated, decoding that pair of tone signals to a corresponding digit value, and transmitting that digit value across the connectionless network (see column 12, lines 35-43). Naudus differs from claim 2 in that he fails to disclose notch filtering a plurality of signal samples to determine the presence or absence of an audio multi-tone signal. However, the use of

notch filtering to determine the presence or absence of an audio multi-tone signal is old and well known in the art. For example, Cox et al. teach just such a method (see Figure 2), which has the advantage of providing superior classification performance with an algorithm of low computational complexity (see column 2, lines 5-7). One skilled in the art would have recognized the advantage of using notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. into the system of Naudus to achieve the advantage of providing superior classification performance with an algorithm of low computational complexity.

14. Referring to claim 3, Naudus discloses that said voice traffic is transported from the connectionless network to a further time division multiplex network (see Figure 1, #16), and wherein said transmitted digit value is re-encoded as a corresponding pair of audio tone signals on egress from the connectionless network (see Figure 3).

15. Referring to claim 14, Naudus discloses an arrangement for transporting voice traffic and audio tone signaling information from a time division multiplex network (see Figure 1, #17) to a connectionless network (see Figure 1, #20), the arrangement comprising speech encoding and compression means for compressing (see column 12, lines 27-29) and packetising said voice traffic, and logic means for decoding a tone signal to a corresponding digit value when said tone signal has been detected, and means for transporting that digit value across the connectionless network (see column 12, lines 24-43). Naudus differs from claim 14 in that he fails to disclose notch filtering a plurality of signal samples to determine the presence or absence of an audio

multi-tone signal. However, the use of notch filtering to determine the presence or absence of an audio multi-tone signal is old and well known in the art. For example, Cox et al. teach just such a method (see Figure 2), which has the advantage of providing superior classification performance with an algorithm of low computational complexity (see column 2, lines 5-7). One skilled in the art would have recognized the advantage of using notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. into the system of Naudus to achieve the advantage of providing superior classification performance with an algorithm of low computational complexity.

16. Referring to claim 15, Naudus discloses that said voice traffic is transported from the connectionless network to a further time division multiplex network (see Figure 1, #16), and wherein said transmitted digit value is re-encoded as a corresponding pair of audio tone signals on egress from the connectionless network (see Figure 3).

17. Referring to claim 20, Naudus discloses a communications network arrangement comprising a time division multiplex (TDM) network in which narrow band traffic is transported in frames (see Figure 1, #17), and a connectionless network in which said narrow band is transported in a compressed form in cells or packets (see Figure 1, #20), wherein, within the TDM network, signaling of user dialed digit information is performed by the transmission of dual tone multi-frequency (TDMF) pairs of signal tones (see column 6, lines 54-67), and wherein a boundary between the TDM and connectionless networks incorporates signaling tone detection means (see column 12, lines 24-61), and logic means for decoding a pair of tone signals to a

corresponding digit value (see Figure 3) when said tone signal pair has been detected, and means for transporting that digit value across the connectionless network (see column 12, lines 24-61). Naudus differs from claim 20 in that he fails to disclose notch filtering a plurality of signal samples to determine the presence or absence of an audio multi-tone signal. However, the use of notch filtering to determine the presence or absence of an audio multi-tone signal is old and well known in the art. For example, Cox et al. teach just such a method (see Figure 2), which has the advantage of providing superior classification performance with an algorithm of low computational complexity (see column 2, lines 5-7). One skilled in the art would have recognized the advantage of using notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of notch filters to determine the presence or absence of an audio multi-tone signal as taught by Cox et al. into the system of Naudus to achieve the advantage of providing superior classification performance with an algorithm of low computational complexity.

18. Referring to claim 21, Naudus discloses that said voice traffic is transported from the connectionless network to a further time division multiplex network (see Figure 1, #16), and wherein said transmitted digit value is re-encoded as a corresponding pair of audio tone signals on egress from the connectionless network (see Figure 3).

19. Claims 16, 17, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naudus (U.S. Patent No. 6,259,691) in view of Cox et al. (U.S. Patent No. 5,353,346), further in view of Felder et al. (U.S. Patent No. 6,370,244).

20. Referring to claim 16, Naudus in view of Cox et al. differ from claim 16 in that they fail to disclose a power level measurement means for determining a power level of said pair audio tone signals. However, the use of determining a power level of a pair of audio tone signals for determining the presence or absence of DTMF signals is old and well known in the art. For example, Felder et al. teach just such a method (see column 2, lines 45-67 and column 3, lines 1-11), which has the advantage of increasing the accuracy of DTMF signal detection. One skilled in the art would have recognized the advantage of determining a power level of a pair of audio tone signals for determining the presence or absence of DTMF signals as taught by Felder et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of power level determination as taught by Felder et al. into the invention of Naudus in view of Cox et al. to achieve the advantage of increasing the accuracy of DTMF signal detection.

21. Referring to claim 17, Felder et al. disclose that said logic means is arranged to detect a tone signal pair by comparing the frequency and power level of each signal of the pair with predetermined reference values (see column 2, lines 45-67 and column 3, lines 1-11).

22. Referring to claim 22, Naudus in view of Cox et al. differ from claim 22 in that they fail to disclose a power level measurement means for determining a power level of a said pair audio tone signals. However, the use of determining a power level of a pair of audio tone signals for determining the presence or absence of DTMF signals is old and well known in the art. For example, Felder et al. teach just such a method (see column 2, lines 45-67 and column 3, lines 1-11), which has the advantage of increasing the accuracy of DTMF signal detection. One skilled in the art would have recognized the advantage of determining a power level of a pair of audio

tone signals for determining the presence or absence of DTMF signals as taught by Felder et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of power level determination as taught by Felder et al. into the invention of Naudus in view of Cox et al. to achieve the advantage of increasing the accuracy of DTMF signal detection.

23. Referring to claim 23, Felder et al. disclose that said logic means is arranged to detect a tone signal pair by comparing the frequency and power level of each signal of the pair with a predetermined reference values (see column 2, lines 45-67 and column 3, lines 1-11).

24. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. (U.S. Patent No. 5,353,346) in view of Nicol (U.S. Patent No. 6,757,367).

25. Referring to claim 13, Cox et al. differ from claim 13 in that they fail to disclose an ATM switch incorporating a tone detector as claimed in claim 11. However, ATM switches that need to determine the presence of DTMF signaling are well known in the art. For example, Nicol teaches just such an ATM switch (see column 4, lines 34-51), which has the advantage of enabling telephony devices to communicate over the Internet (see column 1, lines 52-57). One skilled in the art would have recognized the advantage of an ATM switch determining the presence or absence of DTMF signaling as taught by Nicol. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of DTMF detection in an ATM switch as taught by Nicol into the ivention of Cox et al. to achieve the advantage of enabling telephony devices to communicate over the Internet.

Allowable Subject Matter

26. Claims 4-7, 9, 18, 19, 24, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

27. The following is a statement of reasons for the indication of allowable subject matter: The prior art does disclose systems wherein DTMF signals are converted from PCM signals as in a telephone network to digital signals (such as digital values stored in packets or cells) for transmission over a packet-based network and then converted back to PCM signals for transmission over a telephone network. Furthermore, the prior art teaches the importance in calculating power levels of DTMF signaling in ensuring that DTMF signals are only detected when actually present. However, the prior art fails to teach transmitting the power levels together with the DTMF digital values over the packet-based network.

Conclusion

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

29. U.S. Patent No. 6,075,783 to Voit teaches a method of decoding DTMF signals for transport over a packet network and teaches compressing and packetising the samples.

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Molinari whose telephone number is (703) 305-5742. The examiner can normally be reached on Monday-Thursday 8am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJM

Michael Joseph Molinari

DUC HO
PRIMARY EXAMINER

Duc Ho

7-14-04